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An evaluation of the cost effectiveness of several methods of deer harvest on private land in the Adirondacks

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FINAL JOB COMPLETION REPORT

W-105-R

Job XIII-4

An Evaluation of the Cost Effectiveness of Several Methods of Deer Harvest on Private Lands in the Adirondacks

FINAL JOB COMPLETION REPORT

STATE: New York

PROJECT NO. W-105-R

PROJECT TITLE: Wildlife Ecology, Behavior and Habitat Improvement in New York

STUDY NO. AND TITLE: XIII - Deer Management Research in Northern New York Ecosystems

STUDY OBJECTIVE: To research selected aspects of deer resource dynamics that have been identified as key components in the redefinition and/or implementation of deer management strategic plans and programs in northern New York.

JOB NO. AND TITLE: XIII-4 An evaluation of the cost effectiveness of several methods of deer harvest on private land in the Adirondacks.

JOB OBJECTIVE: To document and compare the effectiveness and cost-benefit ratios associated with several alternative methods of deer harvest on private land in the Adirondacks.

PERIOD COVERED: April 1, 1978 to March 31, 1981

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FINAL REPORT

STATE: New York

PROJECT NO.: W-105-R-20

PROJECT TITLE: Wildlife Ecology, Behavior, and Habitat Improvement in New York

STUDY NO. AND TITLE: XIII - Deer Management Research in Northern New York Ecosystems.

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Job Objective: To document and compare the effectiveness and cost-benefit ratios associated with several alternative methods of deer harvest on private lands in the Adirondacks.

Period Covered: April 1, 1978 to March 31, 1981

Abstract: A total of 666 archery, muzzleloader and rifle hunters participated in three years (1978-80) of big-game hunting on a 5437 acre tract of managed private forest land located in the central Adirondack region of northern New York. Hunting was by prior reservation only on a first come-first served basis until the established quota of hunters was reached. Hunter densities never exceeded 15 hunters/mi^2 and were generally below 5 hunters/mi^2. This hunting provided a total of 1975.5 recreational days of either sex, big-game hunting and camping. Hunters were charged fees ranging from $25.00 for a four-day hunt to $5.00/hunter/day. A total of $13,110 in income was generated from these hunting activities. Mean annual net income was $2419 or $0.44/acre/year. Annual costs to operate these controlled hunts averaged $1950 or $0.36/acre/year with insurance costs representing the largest single cost item (32%). Twenty six

white-tailed deer *(Odocoileus virginianus)* and 6 black bear *(Ursus americanus)* were harvested during these hunts. The combined (archer, muzzleloader and rifle) hunter success rate for deer only, was 3.9%. Both the landowner and the participating hunters were generally pleased with the overall experience. However, the landowner's objective to achieve deer density control through a controlled fee hunting program was not realized due to failure to harvest adequate numbers of female deer. The advantages and disadvantages of this system of hunting are compared with those associated with the traditional land-lease hunting system widely practiced in the region and with the results of an experimental rifle hunt on the same study area during 1966-70.

Background

American hunters have evolved under a tradition which permits "free access to hunt". This tradition is gradually being changed as private landowners recognize the value of the resource on their lands and as public lands are called upon to serve a wider variety of conflicting interests.

Throughout the United States, ownership of wildlife is held by the public and is not considered an asset owned by the private landowner on whose land the wildlife resides. As a result, the private landowner can only "sell" access to his land for the pursuit of wildlife species. Enterprising landowners have begun to capitalize on these assets in a variety of ways, particularly within the past 10-15 years. It is likely that this situation will become more commonplace in the years ahead.

Historically, early hunters had free access to vast acerages of land on which to pursue game animals. Gradually land became less available as it was purchased by a wide variety of owners. As "accessible" land became limited and

the number of hunters increased, interest in hunting of private land increased. Large private landowners became aware of this demand and began to lease tracts of their ownerships to groups of hunters. At first these leases were regarded by the landowner as a means of having "caretakers" on their land and/or a good public relations measure. As the demand for leases increased, landowners began to charge minimal fees. Gradually fees were increased to the point where today most land leases generate enough income to cover the cost of land taxes and many produce income in excess of this amount.

Two basic approaches are used by private landowners to generate income through hunting-land lease hunting and fee hunting.

Land lease hunting is widely practiced throughout the northeast. Under this system, a group of hunters (often an organized sportsmans club) lease a parcel of land from a private landowner and pay an annual sum usually based on the size of the parcel and the facilities or resources available on the land area. A large majority of paper company lands in the Adirondacks, as well as the land of other private owners is leased under this system. Most leases are renegotiated annually and the owner generally imposes certain restrictions on the use of the land. These leases generally permit year round use of the area for such things as hunting, fishing, snowmobiling, trapping, hiking and in some cases, construction of a club house or camp.

In general, the leasee posts the area leased and establishes and enforces its own rules and regulations within the limits established by the landowner and the state. In nearly all cases, the landowner requires the leasee to sign a written lease agreement which is renewed annually.

Within the Adirondacks, habitat management practices (conducted by the

leasee) are not permitted by most landowners due to the fact that timber production is their prime interest. Timber harvesting is the primary method by which habitat is modified. Leasees commonly feed deer during the winter, however, the value of this practice is uncertain.

Fee hunting is defined for the purposes of this report as any hunting where an indiviudal is charged a fee (usually on a daily or seasonal basis) for hunting wild game on private land. This excludes shooting preserves where pen raised game is released prior to the hunter's arrival on the area.

Fee hunting is not widely practiced in the northeast but is common in the southeast and south central portions of the United States. The most notable example of fee hunting on a large scale is in Texas where approximately 95% of the land is privately owned. In Texas, fee hunting for white-tailed deer generates incomes which range from $1.00 to $4.00/acre/year on areas where grazing rights are only $0.25 to $0.50/acre/year. In areas managed for "quality white-tailed deer production", income from hunting is as high as $7.00/acre/year (C. Allen, St. Regis Paper Co., Lufkin, Texas; personal communication). In many areas throughout the south, private landowners are becoming aware that sport hunting and appropriate wildlife management practices can substantially increase their income and even generate incomes in excess of traditional land use practices.

Fee hunting in the northeast is gradually gaining in popularity, particularly in the area of waterfowl hunting. Private landowners in central New York are leasing blinds in areas of excellent waterfowl hunting at rates of $100/day. In Maryland, goose hunting blinds with guide, boat and decoys are going for $130/person/day.

Small private landowners are beginning to charge hunters a fee to hunt either big or small game or both on a seasonal basis on their lands. Usually the landowner makes these arrangements with a limited number of hunters (< 10) depending on the size of the tract involved. The arrangement is generally a casual one (without written agreement) but with each hunter aware of the landowner's interests and concerns. Arrangements of this kind are common throughout central and western New York, northern New Jersey and elsewhere in rural areas of the northeast located close to urban centers.

Fees associated with this type of hunting on private land vary considerably depending upon the landowner and the resources provided. In one situation in northern New Jersey, a fee of $200/hunter/season was charged in 1981. This particular landowner permitted both deer and small game hunting on his 65 acre tract and limited hunting to six people per season. In a similar case in western New York, the fee being charged was $100/hunter/season. Hunting on this 2500 acre tract was restricted to deer hunting only with 25 hunters permitted access. In many cases similar to those just discussed, the hunters involved have developed a working relationship with the landowner over a period of several years and as a result both the owner and the hunters have benefited from this association.

Another form of fee hunting common in some areas of the northeast such as northern Maine and parts of New Hampshire, New York and Vermont, centers around a private individual who provides guiding services and other accommodations to hunters (generally big-game hunters). Some outfitters or guides may take hunting parties to hunt on their own land, but often public lands or other private lands are hunted. Again fees vary considerably based on the type of game hunted and the services provided. Fees for this type of hunting experience are generally

based on daily rates and may range from $60 to $250/day. Individuals who cater to hunters in this way generally operate as a business and may accommodate other groups of recreationists such as fishermen, canoeists or hikers during the non-hunting season. Most of these operations are not restricted to lands owned by the individual outfitter however, and as a result it is impossible to determine an income on a per acre basis.

In this report, land lease hunting as currently practiced in the Adirondack region of northern New York, will be compared with a system of fee hunting initiated at the Huntington Wildlife Forest in the fall of 1978. A variety of factors including income, costs, harvest strategies and methods, hunter participation and success, hunter characteristics and attitudes, landowner objectives and attitudes, and the management of deer population levels, will be discussed. The advantages and disadvantages of these two systems for generating income from hunting will be compared.

An important aspect of this study was to determine if an intensive timber/deer management program combined with a system of fee hunting could be developed which would generate added income for private landowners while maintaining deer densities at levels compatible with high quality timber management objectives. This option could be especially attractive in northern New York where many of the large private landowners are paper companies whose primary management objective is timber production. Furthermore, if the monetary value associated with the deer resource on private land could be better defined, it would enhance the recognition of the importance of this wildlife species which could encourage more intensive management programs on private land.

Study Area Description

The study area is located near the geographic center of New York's Adirondack Mountains. The topography is mountainous, and soils are predominantely glacial till formed from fine grained metamorphic and igneous rocks.

The flora and fauna are transitional between the Deciduous and the Taiga or Coniferous Biomes (Dice 1952, Allee et al. 1949). The area is essentially completely forested, the few parcels of open land are associated with human habitation, intensive burns, and the activities of beaver *(Castor canadensis)*.

As a result of the northern latitude and elevation, growing seasons are short, typically 90-120 days (Smith 1955). Winters are cold and long with an average snowfall of 113 in. The average number of days with snow on the ground is 134 days. The mean monthly temperature for January is 17.4^{o} F and for July 65.5^{o} F. The combination of snowfall and cold temperatures generally results in a snowpack of 14 to 51 in. from mid-January through the end of March. (These data were recorded at the Huntington Wildlife Forest a National Weather Service Cooperative Weather Station, Newcomb, 4WNW, and represent averages for the 26 year period 1950-1976.

At snow depths of 15 in. or greater, deer move to winter concentration areas. As the snowpack falls below this level in spring, deer begin to move from winter range toward spring-summer-fall range. The number of days deer are confined on winter range varies considerably from one year to the next. However, snow depth records collected during the period 1962-1977 suggest confinement periods ranging from a minimum of 50 days in 1967 to a maximum of

131 days in 1970-71 with a mean of 84 days. The survival of white-tailed deer in winter is believed to be highly correlated with the length of confinement to winter range (Mattfeld et al. 1975).

Vegetation

Most of the area was logged in the late 1800's for white pine, *(Pinus strobus)*, red spruce *(Picea rubens)* and hemlock *(Tsuga canadensis)*. Current logging operations have been concentrated on hardwood species including sugar maple *(Acer saccharum)*, yellow birch *(Betula alleghaniensis)*, beech *(Fagus grandifolia)*, red maple *(Acer rubrum)*, white ash *(Fraxinus americana)*, and black cherry *(Prunus serotina)*. Primary products from these species include sawtimber, veneer and pulpwood. Commercially important softwood species include white pine, hemlock, red spruce, and balsam fir *(Abies balsamea)*, used for both sawtimber and pulpwood products.

The forest types of the area are complex. They include northern hardwoods (beech-birch-maple, type 25), coniferous types (red spruce-balsam fir, type 33) and mixedwood types (type 24 and 30) (SAF 1964). However, individual stands may vary from nearly pure sugar maple to nearly pure red spruce. Less common merchantable species include paper birch *(Betula papyrifera)*, aspen *(Populus spp.)*, and northern white cedar *(Thuja occidentalis)*. Noncommercial tree species such as pin cherry *(Prunus pensylvanica)*, mountain ash *(Sorbus americana)*, hophornbeam *(Ostrya virginiana)* and striped maple *(Acer pensylvanicum)* are common.

The study area is located within the 15,000 acre Archer and Anna Huntington Wildlife Forest Station (Newcomb Campus of the State University of New York, College of Environmental Science and Forestry). The northern 5437

acres of this property (8.49 mi^2) comprised the hunting area where the fee hunts were conducted. (Fig. 1)

The hunting area is completely forested and comprised of 72% northern hardwoods, 18% hardwood-conifer and 10% softwood forest types. The forests of the study area can be characterized as Behrend (1966) described for the entire Huntington Forest.

Upper elevations - largely coniferous; mostly red spruce.

Middle elevations - mostly hardwood; beech and sugar maple predominating, with some yellow birch and conifers.

Lower slopes and drier bottoms - predominatley mixed-growth; with hemlock red spruce and yellow birch comprising the bulk of the stands.

Bottoms, swamps, lakeshores - mostly coniferous; varying with site from spruce-fir to white cedar.

Since 1968, approximately 45% of the area has been involved in timber harvesting activities aimed at regeneration or thinning of hardwood and hardwood-conifer stands. As a result, 20% of the area (1070 acres) within the study area has been successfully regenerated to a wide variety of hardwood and softwood species. The trees on these areas are all less than 15 years of age and stem densities range from 8,000-40,000 stems/acre.

There are nearly 10 miles of gravel roads and 7 miles of winter truck roads on the study area. A ¼ mile square grid system of painted lines (paint blazes on trees) was established on most of the area in the 1930's for research purposes. Many of these lines have been brushed out in recent years in conjunction with the deer censuses conducted under PR W-105-R,Job XIII-8. In addition, many miles of skid roads resulting from the recent logging activities, exist on the study area.

Together these roads and grid lines provide excellent vehicular and walking (hunting) access throughout the study area.

Deer densities on the study area were estimated at 27 deer/mi^2 in the fall of 1966. Public hunting under a system of day-use rifle hunting and deer management permits (allowing the harvest of female deer) during the period 1966 through 1970 reduced deer densities by ½ and maintained these levels through 1970 (Behrend et al. 1970). Severe winters during 1969, 1970 and 1971 reduced deer densities throughout the region. Populations of the study area were estimated at 5 deer/mi^2 in 1971 based on a variety of population indices maintained at the Huntington Forest. Deer densities have gradually increased since 1971 and prior to the first fall archery hunt of 1978 (under this study) estimates for the study area placed population levels at 8 deer/mi^2. Deer drive census estimates (conducted under PR W-105-R, Job XIII-8) placed pre-hunt fall deer densities on the hunting area at 11 and 14 deer/mi^2 in 1980 and 1981 respectively.

Procedures

Hunters were originally contacted in spring 1978. A news release was written by the State University of New York, College of Environmental Science and Forestry's (SUNYCESF) news service and distributed to newspapers throughout the northeastern United States. Information sheets were also handed out at the Adirondack White-tailed Deer Forum. Other advertising included an ad published in "Archery" magazine, and information sheets sent to approximately 200 bowhunting clubs in the northeast registered with the National Field Archers Association.

Interested hunters were instructed to contact project personnel at SUNY's Newcomb Campus (project headquarters) for further details and reservation forms.

After completed reservation forms with the appropriate deposit fee were received, each party was assigned a campsite until the 25 party limit was reached. Successful parties were then notified of their campsite number and location and were sent a receipt for their deposit along with a map showing how to get to the Huntington Forest. Unsuccessful party reservation forms and deposit checks were returned to the party leader with a note requesting them to reschedule their hunt at a different time, if possible.

All hunters were required to check in at the project headquarters upon arrival and prior to setting up camp. At this time, fees were collected, rules and regulations were reviewed, and any additional information such as gate combinations, directions to campsites and the questionnaires were gone over with all members of each party. Access points to the hunt area were equipped with locked gates, which remain locked throughout all hunts, with hunters unlocking and locking the gates each time they entered or left the hunt area. An example of all information provided to hunters both prior to and at the time of their arrival is provided in Appendix 1.

The questionnaire distributed to each hunter was designed to determine the hunter's past hunting experience, hunting effort, attitude toward various deer management philosophies, and his/her feelings and suggestions on how the hunt was administered. An attempt was made each year to modify the questionnaire distributed to returning hunters. In this way, interest in answering and returning questionnaires remained high and at the same time allowed collection of valuable information which could only be obtained from the returning hunters.

A series of 35 campsites were developed along the 10 miles of forest roads on the hunting area. Campsites were generally existing road turnouts, abandoned log landings, or were purposefully constructed by bulldozing a flat area along

a roadside. Campsites consisted of reasonably level, cleared areas adjacent to the gravel road. Outhouses were located at each site, but no other facilities were provided. A maximum of 25 camping parties were allowed on the hunting area at any one time. Party size was specified at 2-5 people, but larger parties were allowed.

Forest roads were traveled at least once a day during hunting activities to answer questions, make sure rules were being followed, give assistance where needed, check deer and bear harvested, and to periodically pick up garbage. It was common for staff personnel to stop and talk briefly with different hunting parties (generally at their camp) during these trips. These discussions proved to be an important means of assessing hunter reaction to this hunting experience.

All deer harvested were sexed, aged, weighed, and antler characteristics recorded according to procedures outlined by the N.Y.S.D.E.C. In addition, the antlers of all large bucks were scored according to Boone and Crocket guidelines to determine their rating as a trophy class animal.

The only change in procedures in 1979 and 1980, from those of 1978 was that party leaders from the previous year's hunts were automatically sent an information sheet and registration form. There were no advertisements placed in magazines, and information sheets were not sent to archery clubs.

The first hunt each year is an archery hunt which coincides with the opening of the northern zone archery season (Sept. 27). This allows unsuccessful hunters from the previous year the opportunity to fill last year's tag as the New York hunting license year runs from Oct. 1 through September 30.

Four separate 4-day archery hunts were offered in 1978 (Sept. 29 - Oct. 2,

October 6-9, October 12-15, and October 17-20). Hunters were charged $25.00 per hunt regardless of the number of days hunted. A non-refundable $20.00 deposit was required from each hunting party.

In 1979, 3 archery hunts were offered (September 27-30, October 5-8, and November 3-11), and 1 week of muzzleloader hunting (October 13-19). Hunters were charged $5.00/hunter/day and a $10.00 non-refundable deposit was required for each party.

Four hunts were offered in 1980 - an early archery hunt (September 27 - October 10), a muzzleloader hunt (October 11-17), a rifle hunt (October 8-21), and a late archery hunt (November 1-9). Hunters were again charged $5.00/hunter/day, with a non-refundable $10.00 deposit per party. Day-use hunting was permitted in 1980. Day-use hunters were also charged $5.00/hunter/day, even though no campsite was required.

An insurance policy was purchased through the Hartford Insurance Group each year. This is a liability policy and costs approximately $3.00/hunter/year. A record of all supplies and materials, equipment and personnel time involved in setting up and conducting these hunts was maintained. Those activities connected with the research aspects of this study were not considered when the costs were summarized. This was done so that the costs reported represented as closely as possible those that would be associated with a private landowner operated hunt.

Revenues generated under land lease systems were obtained from a survey of private landowners in the Adirondacks whose combined total ownership represented over 630,000 acres, 478,287 acres of which is currently under lease. Information representative of the relative importance of different outdoor activities (i.e. hunting, fishing, trapping, etc.), based on user days, was available from one of

these landowners. This information was used to describe the relative importance of these activities for the entire sample of leased land. Data on big-game harvests were also determined from this same landowner.

Throughout this report data from the fee hunting study will be compared with data collected during the 1966-70 rifle hunts on the same study area. This rifle hunting was done under a deer management permit system which allowed both bucks and does to be harvested. A total of 134 males and 138 females were harvested. Hunter densities averaged 19 hunters/mi^2. A maximum of 200 hunters were permitted on the hunt area each day. No camping was allowed and each hunter was required to check in and check out each day. This hunting was also conducted in conjunction with a research project designed to determine if deer numbers could be reduced and maintained at levels compatible with forest management objectives. No fees were charged for this hunting and no cost data is available.

FINDINGS

Fee Hunting

Income and Costs: Total income from the fee hunting program at the Huntington Forest ranged from a high of $5925 in 1978 when 225 archers participated in a total of 670.5 user days, to a low of $2505 in 1979 when 164 archery and muzzleloader hunters accounted for 479 user days. Income increased in 1980 when $4680 was collected from 277 archers, muzzleloaders and rifle hunters who participated in 808 recreational days of hunting. Net income followed the same basic pattern as gross income with a high of $3754 in 1978, a low of $544 in 1979, and a rebound to $2958 in 1980. In total, the 3 years of fee hunting generated $13,110 gross income or $7256 net income. Average annual net income

was $0.44/acre and ranged from $0.10/acre in 1979 to $0.69/acre in 1978 (Table 1).

Total costs decreased slightly each year of the study. Initial investments in campsite and outhouse construction were prorated over a five year period thus avoiding a large first year expenditure for these items. Costs ranged from a high of $2171 in 1978 to a low of $1722 in 1980. Average annual costs were $0.36/acre or 45% of total income. The single largest cost was liability insurance. Insurance accounted for 32% of all costs incurred (Tables 1,2).

Deer Harvest: A total of 26 deer (17 males and 9 females) and six bear were harvested on the study area during the 3 year hunting period 1978-80 (Table 3). The buck kill on the study area was 0.35/mi^2, 0.12/mi^2 and 1.30/mi^2 respectively for the 1978-80 period. Age composition of the deer harvested included 7.7% fawns, 15.4% yearlings and 76.9% 2½ year and older deer. Six of the 17 males harvested were considered "trophy bucks", scoring more than 120 points (Boone and Crockett). The body weights and antler beam diameters for several age classes of deer harvested during the 1978-81 fee hunts were significantly higher than those of the deer taken during the 1966-70 rifle hunts. A comparison of selected physical characteristics of the animals harvested during the 1978-80 and 1981 fee hunts and the deer harvested during the 1966-70 rifle hunts is presented in Table 4. Data from the 1981 fee hunt (collected under PR W-105-R, Job XIII-10, an extension of the study reported herein) is included in order to increase the sample size and make statistical comparisons possible.

Hunter Success and Effort: Hunter success, based on the number of deer shot per hunter and expressed as a percent, averaged 3.9% over the 3 year period of combined archery, muzzleloader, and rifle hunting. Archery hunter success

was 2.7%, muzzleloaders had a 6.9% success rate, and the limited amount of rifle hunting (4 days in 1980 under a "bucks only" season) resulted in a success rate of 3.6%.

Day-use rifle hunting on the same study area during 1968-70 resulted in a success rate of 4.1% based on deer shot per user day, as compared with 0.9% for archery and 2.5% for muzzleloader hunting conducted under this study (1978-80). Rifle hunting ("bucks only") success in 1980 was 1.3%.

Shots at deer averaged 0.3 per hunter. Hunters hit one deer per 3.0 shots taken and harvested one deer per 5.4 shots. In 1979 and 1980, a total of 29 deer were reported hit while 20 deer were harvested. An average of 1.98 deer were seen per hunter/day. These figures are based on all hunter groups; archers, muzzleloaders and rifle hunters participating in the 1978-80 fee hunts.

Hunter effort averaged 7.28 hrs. of hunting/day, with the average hunter staying 3.08 days. This figure of 7.28 hrs. hunted/day represents an increase of 1.44 hrs./day over the 5.86 hrs./day spent hunting during the 5 years of day-use rifle hunting in 1966-70. The average annual number of user days/acre (total user days/total land area) for the 1978-80 period was 0.12.

Hunter Characteristics and Attitudes: Information on hunter characteristics and attitudes was obtained from the questionnaires given to each hunter (Appendix I). Average reporting rate was 67.5% for the 4 years 1978-81, and ranged from 57.8% in 1978 to 83.4% in 1980. A total of 612 questionnaires were filled out and returned. Questionnaires are summarized and the results reported herein on the basis of 4 years of fee hunting (1978-81) as this study has been continued under a new job - PR W-105-R, Job XIII-10, which will continue through March of 1984 (Appendix II).

Questionnaire responses indicate that hunters participating in these hunts had an average of 18 years of prior hunting experience. Responses also indicate that the average number of years of archery or muzzleloader hunting experience has declined steadily from a high of 10.0 years in 1978 and 1979 to a low of 7.7 years in 1981 for archers, and from 4.0 years in 1979 to 2.2 years in 1981 for muzzleloaders.

Seventy nine percent of all hunters participating in these hunts during 1978-80 were residents of New York State. However, the percentage fell to only 44% in 1981. Participating hunters came from five states other than New York, including Pennsylvania, New Jersey, Connecticut, Vermont and West Virginia. All respondents indicated that they also hunt in areas other than the Huntington Forest and/or northern New York.

Seventy one percent of all hunters responding did not belong to an archery or muzzleloader club. Furthermore, 75% did not belong to a club which leases land for hunting and 62% had never paid a fee to hunt before.

Responses to a variety of questions relating to the administration and operation of these hunts indicated widespread approval; with approximately 97% of all respondents indicating either a favorable of very favorable reaction. There has been a consistant increase throughout the 4 year period in the percentage of hunters indicating they would return to hunt in future seasons. In 1978, 64.0% indicated they planned on returning; in 1979, 84.8%; in 1980, 93.3%; and in 1981, 96.1% said they would return to hunt the next year. In contrast, the actual percentage of returning hunters in 1979 was 22.5%, 27.1% in 1980, and 43.7% in 1981. The average figure for the 3 year period was 31.0%.

In 1978, 80% of the hunters responding indicated they considered hunting conditions to be difficult, with only 19% classifying them as average. In 1981, 30% classified hunting conditions as difficult while 66% classified them as average. Also, in 1978, 84% of the hunters considered deer densities on the hunting areas to be low, 14% classified deer densities as average and < 2% indicated population levels were high. In comparison; in 1981, 68% of the hunters participating felt deer densities were low, 32% average, and 0% felt deer numbers were high.

Deer densities on the study area increased gradually from 8 to 14 deer/mi^2 during the 1978-81 period. Both hunter success rates and the average number of deer seen per hunter increased throughout this study.

Forty one percent of the hunters responding indicated they usually hunt on public land while 46% generally hunted on private land. Fifty nine percent indicated they prefer to hunt on private land.

Thirty six percent of the hunters hunted at least a portion of the time from a portable tree stand. A large majority of these hunters were archers.

Although adjacent state land surrounded the study area, and hunters knew they could hunt on this area, only 23% took advantage of this opportunity.

An average of 73% of the hunters questioned indicated a desire to come and scout the area prior to the open season.

Fifty six percent of the respondents indicated that opening the area to rifle hunters under a "bucks only" season would negatively influence their decision to hunt the area in the future.

Thirty four percent of all hunters surveyed indicated they were primarily interested in hunting bucks while on the study area, although both bucks and does were legal game. In 1980, responding hunters indicated they passed up 7 "good" shots at deer because they involved females or fawns.

Sixty percent of the responding hunters were in favor of a "one deer of either sex" season in all of northern New York, while 87% were in favor of a "one deer of either sex" season if private landowners could demonstrate significant losses due directly to deer. Seventy two percent felt that bow hunters and muzzleloaders should not have to buy an additional stamp to hunt if they were only allowed to shoot one deer per year, and 86% felt that if they did have to buy an additional stamp they should be able to take a deer of either sex on their special stamp, as well as a buck on their regular big-game license.

Hunter attitudes towards several deer management programs were also surveyed. Seventy one percent of the hunters returning questionnaires favored a deer feeding program (on this study area) during severe winters. Of those who had an opinion, 38% were in favor of the establishment of annual buck and doe harvest quotas for the study area,even if this meant that once these quotas were reached hunting would cease for that year. Slightly less than one-half (48%) of the hunters surveyed favored the idea of establishing a "trophy buck" management program on the study area. Seventy six percent of all respondents favored a policy discouraging the shooting of fawns. Of those hunters who had an opinion, 45% favored a policy restricting the shooting of spikehorns, and 31% favored a policy restricting the shooting of spikehorns and forkhorns with the ultimate goal being to protect younger males until they matured and developed larger racks.

Land Lease Hunting

Income and Costs: A survey of private landowners within the Adirondack region of northern New York whose total ownership comprised 630,057 acres, revealed that 478,287 acres (80%) of this land area was currently under lease for recreational use. Over 90% of the remaining land area was open to public access either under the FWMA cooperator program or through other arrangements.

Lease fees ranged from $0.75/acre/year to $4.00/acre/year and averaged $2.25/acre/year. Landowners associated with land leases placed total costs at 10% of annual gross income. These costs were related primarily to the administration of the entire lease system of the landowner. Using the average income figure of $2.25/acre/year and a 10% cost figure, the net income resulting from an average lease in the Adirondacks would be $2.02/acre/year. Based on data from one of these same private landowners for the period 1978-80; user days associated with big-game hunting accounted for an average of 22.5% of the total number of user days reported. Using this figure, the income which can be attributed to big-game hunting under an average land lease would be $0.45/acre/year.

Deer Harvest: The reported buck kill for the years 1978-80 determined from 102,087 acres of leased land in the central Adirondacks, was 1.76, 1.20, and 1.57 bucks/mi^2 respectively. These deer were harvested almost entirely with rifles during the northern zone regular big-game season.

Hunter Success and Effort: Hunter success based on the number of deer harvested per user day averaged 1.3% during the 1978-80 period on the 102,087 acres of leased land surveyed. Again, this figure is associated with rifle hunting almost entirely. Total hunter days for the leased land sampled were

16,948, 11,894, and 11,354 days in 1978, 1979, and 1980 respectively. The average annual number of user days/acre (total user days/total land area leased) for the leased land surveyed was 0.13 during the 1978-80 period.

ANALYSIS

On the basis of the 3 years of experimental fee hunting, it seems clear that a private landowner in the Adirondack region of New York State could generate additional income from his land by initiating a program of fee hunting for big-game. Net income from such a venture under a fee schedule similar to that used in this study could be expected to be about $0.44/acre/year. This income figure is very close to the net income ($0.45/acre/year) currently being generated from big-game hunting only under the land lease hunting system widely practiced throughout this same region.

The high costs associated with a fee hunt program (averaging 45% of total income in this study), which result primarily from the increased amount of personnel time required to administer a fee hunt, could be a major deterrent to a private landowner considering a program of this nature. This is particularly true when net income from fee hunting is nearly the same as that associated with land lease hunting.

Based on our experience with the hunters participating in these hunts, a fee of $5.00/hunter/day is not the upper limit hunters are willing to pay for the hunting experience provided. Therefore, a private landowner could expect to generate income in excess of the $0.44/acre/year figure mentioned earlier. Currently, under a continuation of this research job (PR W-105-R, Job XIII-10), we are charging a fee of $10.00/hunter/day and maintaining our clientel.

There are a variety of factors upon which success or failure of this experimental fee hunting program can be measured including; income, hunter participation, hunter success, deer harvest and/or achievement of landowner objectives. Hunter participation was considered to be one of the most important factors because it served as a measure of both demand and satisfaction.

Participation of 225 hunters in 1978 was viewed as an indication of a successful initial recruitment effort. The drop in hunter participation experienced in 1979 was due in part to a large number of hunters, unfamiliar with Adirondack hunting conditions, being dissatisfied with their 1978 hunting experience and therefore not returning in 1979. This dissatisfaction was attributed to the difficult hunting conditions and low deer densities perceived by these hunters. The number of hunters, as well as income and number of recreation days increased dramatically in 1980 following an additional recruitment effort and a dramatic increase in muzzleloader hunters. The percentage of returning hunters has increased each year from 22.5% in 1979 to 43.7% in 1981 suggesting that over time a clientel of returning hunters can be established. These hunters know what to expect and what not to expect for their fee; and they are satisfied with their past experiences regardless of whether or not they have killed a deer or bear and are likely to return year after year.

The demand for the hunting opportunity provided under this study was difficult to assess from the data collected. The advertising that was done produced the quota of hunters desired for the early part of the archery and muzzleloader seasons each year of the study. However, following the first weekend of archery hunting, participation tapered off drastically with only minor increases in the numbers of hunters on subsequent weekends. The late archery hunt (in 1979 and 1980) was poorly attended. The success of the first part of the

archery season and the success of the one week muzzleloader season can be partly attributed to lack of competition from down-state and out-of-state seasons, to the September 27 opening of archery season in the northern zone which gives unsuccessful hunters from the previous fall one last chance to fill their tags, and to the fact that the special muzzleloader season in New York State is restricted to one week in the northern zone only.

We feel that the "pool" of archery hunters that will come and hunt under the difficult bow hunting conditions and lower deer densities typical of the central Adirondack region, is limited. Muzzleloader hunters are also limited in total numbers, despite the great deal of interest in recent years in this method of hunting.

It should be remembered that the private landowner operating a fee hunt program in the Adirondacks is competing with 2½ million acres of publicly owned land within the Park boundaries where bowhunters and muzzleloader hunters have many of the same privileges i.e. season length, bag limits, ability to take a deer of either sex, etc., and there is no fee involved. This factor, combined with the limited number of archers interested in hunting in the Adirondacks and the limited number of muzzleloader hunters available, suggests that the demand for hunting access on private land by these two groups is not large.

The average number of years of hunting experience per hunter has been constant at 18; suggesting that most hunters attracted to this type of Adirondack hunt are those who have had extensive prior hunting opportunities and are looking to expand their hunting experience into a different environment. This coincides with an increase in primitive weapons hunting in recent years, a trend that was documented in our hunts by the decline in number of years of

bowhunting or muzzleloader hunting experience of the hunters participating from 1978 to 1981. This decrease is probably due to an increased number of experienced hunters turning to primitive weapons for the first time. Thus, their total years of hunting experience remains high, yet they are relatively inexperienced with bow or muzzleloader.

The composition of the deer harvest clearly indicates that our hunters were discriminating against females and younger deer in favor of adult males. This fact is in line with hunter responses from the questionnaires indicating a large percentage were only hunting bucks or bear. Informal interviews with many of the participating hunters clearly indicated that they were not about to "end their deer season in New York" by taking a fawn, doe or young male when they had the remainder of the northern zone season and/or the southern zone season still ahead of them. Even many out-of-state hunters who hunt in the Catskills or in other parts of southern New York expressed these same feelings. This reasoning is not hard to understand when considering the average hunter participating in these hunts has 18 years prior hunting experience and probably has shot several deer during this time. Many of these same hunters indicated they would shoot females and/or fawns if they knew they were going to receive a Deer Management Permit for the southern zone of New York. However, because our hunts occur early in the fall hunting season, this information was not available to them until after our hunts had ended.

These attitudes, combined with low hunter densities, reduced hunter success rates associated with archery hunting, and the low deer densities and difficult hunting conditions typical of the central Adirondacks were largely responsible for the lack of success in achieving the desired harvest of deer on the study area.

An important goal of this study was to determine if deer densities on the study area could be controlled by a combination of archery and muzzleloader hunting under existing state regulations. We would have to conclude, on the basis of the three years of hunting experienced, that this aspect of the study has been unsuccessful.

Severinghaus (1963) concluded that archers alone could only control deer densities on the Howlands Island Game Management Area if there were between 100 and 200 hunters/mi^2. Our intentions, which are supported by our hunters, were never to approach this density of hunters on the study area in order to maintain the "wilderness" quality of the hunting experience. Based on our experience to date, it seems very unlikely that this number of bowhunters could even be attracted to hunt on the study area. Increasing hunter densities is an option still available to us, but the required levels reported by Severinghaus far exceed the limits established for our hunting program.

The higher success of muzzleloader hunters (6.9%) when compared to archers (2.7%), and the dramatic increase in the number of muzzleloader hunters participating in the hunts in 1980 and 1981 suggests that this group has the best potential to significantly impact deer numbers on the study area. Collectively, the two groups (archers and muzzleloaders) may be able to achieve the desired deer harvest level if hunters could be encouraged to harvest more female deer and the number of hunter days was increased moderately.

An incentive, such as the issuance of deer management permits which would allow hunters to take an additional female deer on the study area, would be effective in both increasing the harvest of female deer and encouraging more hunters to participate in these hunts.

As mentioned earlier in this report, maintenance of deer densities at desired levels compatible with timber management objectives could be a primary reason for a landowner choosing to develop a fee hunting program. Past studies at the Huntington Wildlife Forest indicate that deer densities of 12-13 deer/mi^2 (or less) are compatible with the establishment and growth of northern hardwood regeneration (Behrend et al. 1970). Based on our knowledge of the sex and age composition of the local deer herd, an annual harvest of 17 males and 17 females would be required to maintain a population of 12-13 deer/mi^2 on the study area.

During the first two years of this study, deer population levels were below the "critical" density and therefore the reduced harvest of female deer and the low overall harvest was acceptable. By 1980, however, deer densities on the study area had expanded to 11 deer/mi^2, very close to the critical population level. The 1980 fall harvest was 17 deer, 12 males and 5 females. As a result, deer populations increased to 14 deer/mi^2 in 1981. Again, the fall harvest was below the desired level and comprised of 18 males and only 5 females. Continued harvests, of similar composition and magnitude, will result in deer densities in excess of 22 deer/mi^2 in the fall of 1983 barring losses to other mortality factors (Table 5). This deer density is far beyond the "acceptable" range in deer population levels desired on the study area. Such deer densities will undoubtedly have a profound negative impact on the species composition, growth, and development of tree regeneration on those sites where a regeneration cut has been made within the past five years.

With approximately 870 acres of hardwood timberland on the study area in the regeneration phase of the 120 year rotation and net income from timber determined to be $10.19/acre/year under a system of intensive even-aged management, failure

to regenerate and/or control of height development due to excessive deer browsing would result in a loss in revenue of $8,865 annually. Income from fee hunting which averaged $2419/year would only partially offset this loss.

If deer densities were maintained at desired levels, no losses in timber growth would be incurred and the income from fee hunting would be added revenue for the private landowner. Furthermore, under a program of fee hunting which maintained deer densities at levels compatible with timber management objectives, the total revenue from the hunting program could be considered to be the sum of income generated ($2419/year) plus the value of the loss that was not incurred ($8865/year). This would result in an annual benefit of $11,284 attributable to a successful deer hunting program on the study area.

An alternative impact of excessive deer densities would be to alter the species composition of the regenerated stand, but not retard stand development. Projections of the returns from stands composed of 80% American beech and red spruce and 20% other (more valuable) species which often develop in the central Adirondacks in conjunction with excessive deer browsing, place the annual rate of return at $5.19/acre. Thus the average annual loss in revenue in these stands due to the impact of deer is $5.00/acre/year. This figure represents a 49.1% reduction in total net income over the 120 year rotation. Marquis (1981) studying deer damage to forest stands in the Allegheny Plateau region of northern Pennsylvania, determined that losses due to deer could amount to over $13.00/acre/year using this same technique. Stumpage values are higher and rotation lengths shorter in the Allegheny region as compared with the Adirondacks which accounts for the differences in the magnitude of these losses between the two areas. It is interesting, however, that the reduction in revenue in the forest stands of the Allegheny region resulting from the impact of deer

was 48.1% which is nearly identical to the figure of 49.1% determined for stands on the study area.

The physical condition of deer harvested during the 1978-81 fee hunts, was far superior to that of deer taken during the 1966-70 rifle hunts. Significant increases in both body weight and antler beam were documented for several age classes. The harvest of 3 deer with "field dressed" weights in excess of 200 pounds and 11 deer with "racks" scoring 120 points or more (Boone and Crockett) by archers and muzzleloaders during the 1978-81 fee hunts, had an important positive impact on the perceived "success" of these hunts in the eyes of the participating hunters. In addition, it undoubtedly influenced the willingness of many hunters to pay a fee to hunt on the study area. The publicity (both word-of-mouth and the written articles appearing in magazines and newspapers) resulting from the harvest of these animals has contributed significantly to hunter awareness and interest in this hunting program. These "trophy bucks", together with the bear taken on the study area, probably represent the largest single factor attracting new hunters to these fee hunts.

As indicated earlier in this report, deer densities ranged from 8-14/mi^2 during the 1978-81 period when these "trophy" deer were harvested. These densities are in the same range as those determined to be compatible with established forest management objectives (12-13 deer/mi^2) on the study area. Thus, maintenance of deer densities at or below a level of 12-13/mi^2 appears to be compatible with both the development of desirable hardwood regeneration and the production of high quality deer. By maintaining deer densities at this level the loss in income associated with excessive deer densities is avoided while at the same time encouraging the production of the type of animal which attracts hunters, thereby increasing revenue from hunting. It seems clear that management

aimed at the production of "high quality" animals could be an important part of a successful fee hunting program.

Based on hunter responses to the questionnaires and informal interviews with hunters in the field, five major factors were identified (often in combination with each other) as the primary reasons why these hunters were attracted to this fee hunting program:

1) The opportunity to shoot a "trophy" buck or bear.

2) The "wilderness" character of the hunting area and the quality of the hunting experience.

3) The ability to camp on the hunting area, and the excellent road and trail access available.

4) The forest management activities (logging) on the study area were associated with "good" deer habitat management and thus higher deer populations than unmanaged land in the region.

5) The last factor is a collection of intangibles including: the friendships developed with other hunters and the Huntington Forest staff members, a feeling of being a part of an active deer management program, and hunting on an area where only primitive weapons are permitted.

The significance of the first factor (listed above) has been discussed in detail previously in this report. A wide variety of factors contributed to the "wilderness character" and "quality" of the hunting experience identified by many hunters as an important component of these hunts. In interviews with hunters at their campsites, such things as sightings of fisher, marten, bobcat, coyote, beaver, pileated woodpeckers, and black bear were commonly associated with wilderness. The mountains, lakes and streams, expanses of forested land, and the fall foliage coloration were also frequently associated with wilderness by the hunters interviewed. It is interesting that these impressions prevailed despite the fact that nearly ½ of the hunting area had been logged within the

past 10 years and 1/5 of the area was in the early stages of regeneration under an even-aged forest management system. Hunters apparently associated logging with a positive impact on deer habitat, and not as a negative influence on the wilderness character of the area.

In addition, low hunter densities, wide spacing between compsites, a minimum of special regulations and supervision, the ability to camp on the hunting area, and the controlled access to the hunt area were commonly identified as important factors contributing to the quality of the hunting experience.

The "camp tradition" appears to be an important part of deer hunting in the minds of the hunters participating in these hunts. During the 4 years of hunting (1978-81) less than 2% of our hunting parties did not camp on the hunt area. Camps ranged from small 2-man tents to large self-contained motor homes. The excellent road system available on the study area accommodated a wide variety of vehicles including; 30 ft. motor homes, travel trailers, 4-wheel drive pickup trucks, and ordinary passenger cars. The road system on the hunting area also served as a means of distributing hunters. In our judgement, without this type of access, a hunting program similar to the one described in this report would be impossible.

Several references to the logging activities on the study area have been made throughout this report. Despite the fact that hunters had difficulty hunting in the areas which were regenerated (discussed later in this report), it was clear that hunters were attracted to these areas as a result of the increased deer sign found in the logged stands. In 1978, 75.2% of the hunters expressing an opinion felt that logging had a positive impact on deer numbers. The use of

public hunting to control deer densities in order to achieve forest management objectives, appeared to be well accepted by the hunters surveyed with a large majority of hunters favoring special harvest regulations on areas where landowners could demonstrate losses due to high deer densities.

Many hunters have participated in the hunts on the study area 2, 3, or 4 years. These individuals often request the same campsite and hunt the same general area year after year. Some have developed friendships with other hunters participating in these hunts and with the staff members at the Huntington Forest. Their common interests in bowhunting and/or muzzleloader hunting is often the subject of discussion around evening campfires. In 1981, the Huntington staff presented an evening program to both archers and muzzleloaders participating in these hunts; relating research findings from past studies of white-tailed deer biology and behavior and discussing both forest and deer management objectives with these hunters. This feeling of "comradery" and shared interest in an active forest/deer management program has consistently been identified by some hunters as an important part of their experience with this hunting program.

The five most common complaints expressed by the hunters participating in these hunts included; the weather conditions, difficult hunting conditions, low deer densities, not enough hunters on the area, and inability to scout the area prior to the open season.

Rainy, damp weather is common in this region in the fall and this was an important factor affecting hunter satisfaction and to an unknown degree hunter success; especially during the muzzleloader seasons of 1979 and 1980. Several hunters decided not to hunt at all on two consecutive days during the 1980 muzzleloader season due to heavy rains. Misfires were common, particularly

among hunters using flintlocks, and several deer and at least two bear were not shot at in 1980 because guns failed to fire in the rain. Obviously, there is little that can be done about the weather, still some hunters expressed dissatisfaction with their experience because of the weather, particularly after paying a fee to hunt. A longer muzzleloader season may permit a greater amount of flexibility in relation to adverse weather conditions.

The primary complaint concerning the difficult hunting conditions was related to those parts of the hunting area which had been successfully regenerated within the past 15 years under an even-aged management system. Stem densities within the 3-15 foot height class range from 8,000 to 40,000 stems/acre on these areas and most of the skid trails within these regenerated stands have disappeared. As a result, these areas are nearly impossible to "still" hunt and archery hunters in particular have a difficult time getting a clear shot at a deer under these conditions. Most hunters hunted along the fringes of these areas, or used the few remaining skid trails that were not completely grown up with woody vegetation. Some groups of hunters attempted to drive these areas, generally with little success.

Relative utilization of these regenerated areas by deer is high based on track count indices. Hunter reports supported this finding and as a result they wanted to hunt in these areas. Management efforts directed at the maintenance of existing skid roads or other small openings, and/or re-establishing those that have grown up would increase hunter access in these stands and have a positive effect on hunter satisfaction and possibly deer harvest.

Responses from hunters relating to their impression of deer densities on the study area are difficult to assess because each hunter's impression is formed on

the basis of his/her past experiences which vary considerably between individual hunters. A large majority of hunters participating in these hunts also hunted in other areas besides the central Adirondacks and it is likely that deer densities of 8-14/mi^2 would seem low to them after hunting in southern New York, New Jersey or Pennsylvania where deer densities are generally in excess of 25/mi^2 and may range as high as 50-60 deer/mi^2. Maintaining deer densities at 12-13/mi^2, a level compatible with forest management objectives, will discourage some hunters who might otherwise participate in a fee hunting program if deer densities were higher.

Despite the fact that many hunters identified the low hunter densities as an important factor contributing to the "wilderness" character of these hunts; many hunters (31%) felt that there were too few hunters on the study area to adequately "move the deer". This feeling was particularly common among archery hunters. The longer archery season offered probably contributed to reduced hunter densities, however the use of portable tree stands by this group was extremely high (76.9% in 1978) and as a result the numbers of hunters moving around in the woods was greatly reduced. This was particularly true during the early morning and late afternoon periods.

Based on these attitudes of the hunting clientel, it appears as though moderate increases in hunter densities would be acceptable to most hunters; and would not adversely effect the "wilderness" character of these hunts.

The inability of the hunters to come and scout the hunting area prior to the open season was a concern expressed by 73% of the hunters. However, considering only 44% of the 1981 hunters were from New York State, it seems unlikely that very many hunters would drive the long distances necessary to

actually come and scout the area. Most returning hunters have developed a knowledge of the hunting area and are less likely to be interested in pre-season scouting than new hunters. Unles a landowner establishes a fee for this priviledge (which seems unlikely), this activity would require additional landowner supervision and result in increased costs.

In comparing our experience with fee hunting with a traditional land-lease hunting system, a variety of similarities were identified. Average annual net income derived from big-game hunting only under the land-lease system was nearly identical to that generated from fee hunting in this study. In addition, user days/acre of hunted land (used as an index to intensity of use) were 0.12 under the fee hunting program and 0.13 on the leased land surveyed during the 1978-80 period. The buck kill/mi^2 on leased land ranged from 1.20 to 1.76 during 1978-80. Buck kills/mi^2 were 0.35 and 0.12 for archery hunting only in 1978 and archery and limited muzzleloader hunting in 1979 respectively. However, these figures jumped to 1.30 and 1.41 in 1980 and 1981 when both significant numbers of archers and muzzleloaders hunted on the study area. Hunter success on leased land averaged 1.3% (again associated primarily with rifle hunting) as compared to 0.9% for archers, 2.5% for muzzleloaders, and 1.3% for rifle hunters participating in the fee hunting program. These data suggest that the impact of hunting and the effort extended were similar on both the leased land surveyed and the study area.

Traditional land-lease hunting and fee hunting as experienced in this study, both offer the private landowner a variety of advantages and disadvantages. The low administrative costs associated with land-lease hunting and the guaranteed annual income derived from it are clearly two distinct advantages of this type of system over a fee hunting program. There are two primary reasons for the

lower costs associated with the land-lease system. First, the high cost of insurance, necessary to protect the private landowner, is borne by the leasee rather than the landowner. Secondly, personnel time is greatly reduced under the land-lease system. Despite the fact that net incomes from the two types of hunting systems were shown to be nearly equal, the long waiting lists for membership in clubs which lease land, and the ability of landowners to quickly replace one hunting group with another if the group does not live up to the expectations of the landowner, suggests that lease fees could be increased beyond current levels without loss of hunter participation. Gradual increases in lease fees have been the trend over the past 10-15 years and landowners still indicate a continued demand for hunting leases. There is little question that the private landowners in northern New York through their land-lease programs are providing a "service" which is in great demand. It should be remembered, however, that big-game hunting is only a part of these programs and other forms of outdoor recreation constitute over 77% of the income (based on user-days) derived from land leases. A fee hunting program would probably have to generate revenues in excess of the total income produced from these leases to be competitive with the traditional land-lease system.

Year round access to the landowner's property which is common under the land-lease system, can present definite problems to the landowner. Spring and fall damage to gravel roads caused by recreationists is common, and interference with log truck traffic and harvesting operations can also be a problem. In recent years, removal of valuable timber for firewood by leasees has been encountered on several occasions. These situations could be avoided, however they require closer supervision by the landowner and therefore increase administrative costs.

A common problem which can arise under a land-lease system is that the leasees generally have the authority to establish their own rules regarding membership. If a group decides to restrict memebership, the recreational potential of that land area is limited to a very few people. As a result, if the private landowner is interested in controlling deer densities on the leased land area, the limited number of deer that could be harvested by these few members would be insufficient to achieve the desired objective.

Another problem associated with land lease agreements, usually involving organized clubs with a long history of leasing a particular parcel of land, is that these groups may "forget" who actually owns the land. Such groups can be resistant to change and even attempt to dictate policy on "their" land. This can be devastating to a private landowner with an established long-term management program.

On the other hand, having a well organized group to deal with can be a positive factor for a private landowner. Collecting and disseminating information can be accomplished through the leasing group's organization rather than on an individual basis. Costs associated with this process rank as the second highest group of costs in operating the fee hunting program on the study area.

Control, over the harvest, vehicular access, area hunted, hunter densities, and hunter behavior is probably the single most important advantage of a fee hunting program similar to the one studied. Additionally, by opening these hunts to the public on a first-come first-served basis, anyone interested in such a hunting program has an opportunity to participate. This is probably a very important factor if a public agency were to consider a program of this type.

Under a program of fee hunting, the landowner, by establishing limits on

hunter densities, extent of the hunting area, and other factors has the flexibility to focus hunting pressure where and when he wants it, as well as affecting the type of hunting experience provided.

It is quite possible that a private landowner could combine some of the advantages of both hunting systems through a longer term lease agreement (5-10 years which establishes specific criteria under which the leasee would be required to operate; but not restrict the leasee to a particular tract of land. This would allow the landowner the flexibility of moving the hunting area periodically to areas where deer density control is most needed. This approach would require an intensive forest management plan and a cooperative group of hunters.

In summary, in order for a private landowner interested in gaining income from big-game hunting to decide on a fee hunting system as the means to achieve management objectives, the system must provide an incentive to the landowner that traditional land-lease hunting does not offer. This incentive could be higher net returns (if fees were increased), greater control over hunters using the land, the ability to establish limits on the period of time when recreationists were on the land, increased public relations values, greater flexibility in management options, and/or the ability to merge a hunting program with other land management objectives such as timber management or other seasonal recreation programs.

RECOMMENDATIONS

Despite the fact that this is a final report for PR W-105-R, Job XIII-4, the basic study with a modification of objectives has been continued under PR W-105-R, Job XIII-10. Using the established hunting program reported herein,

an attempt will be made to increase the revenue derived from this fee hunting program. A great deal of valuable information will be generated in the remaining two years of study under Job XIII-10 which will confirm, clarify, and add to the information presented in this report. Following completion of this study in March of 1984, publication of the results from the entire six years of the fee hunting program is anticipated.

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Figure 1. Location of the 5457 Acre Fee Hunting Area on the Huntington Wildlife Forest Station.

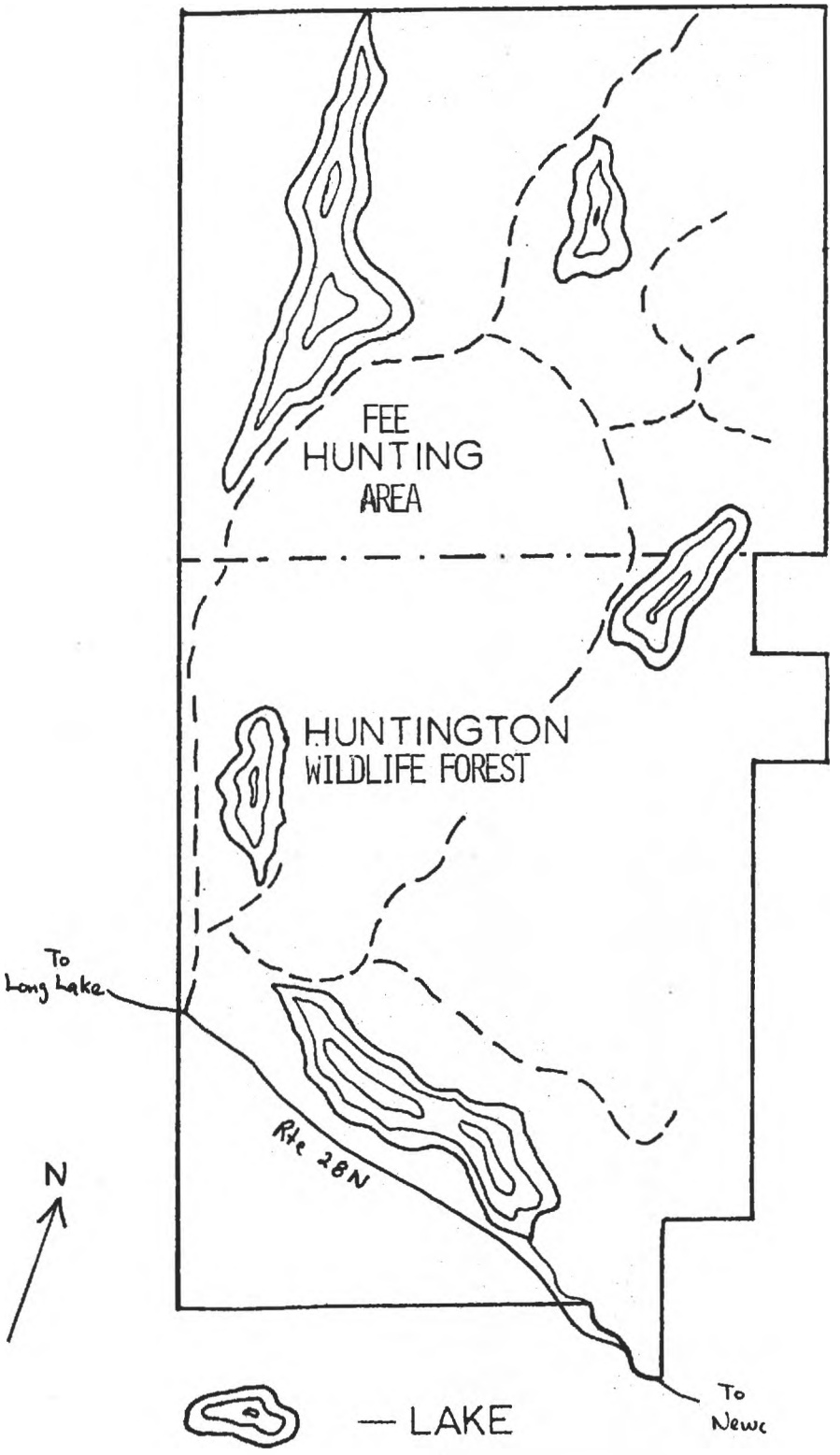

Table 1. Income and costs incurred during three years of fee hunting on the Huntington Wildlife Forest.

Year	Number Hunters	Gross Income	Gross Income/ Acre*	Total Costs	Costs/ Acre*	Cost % of Gross	Net Income	Net Income/ Acre*	Net Income/ Hunter
1978	225	5925	1.09	2171	0.40	36.6	3754	0.69	16.68
1979	164	2505	0.46	1958	0.36	78.2	544	0.10	3.32
1980	277	4680	0.86	1722	0.32	36.8	2958	0.54	14.00
Mean	222	4370	0.80	1950	0.36	44.6	2419	0.44	10.90

* Based on 5437 acres hunted.

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Table 2. Operational costs of fee hunts held on the Huntington Wildlife Forest 1978 - 1980.

Personnel	% of Total	1978	1979	1980	Mean
Supervisor	12.7	276	249	219	248
Technicians (2)	15.2	330	298	262	296
Secretary	10.6	230	208	183	207
Maintenance (2)	8.0	174	157	138	156
Work-study students (3)	2.4	52	47	41	47
Total Personnel	48.9	1062	959	843	954
Other Costs					
Insurance	32.0	695	626	551	624
Phone, postage, printing	7.8	169	153	134	152
Signs, repairs	2.9	63	56	50	56
Garbage bags	0.7	15	14	12	14
Campsite construction[1]	2.2	48	43	38	43
Outhouse construction[2]	4.4	95	86	75	86
Misc. supplies	1.1	24	21	19	21
Total Supplies	51.1	1109	999	879	996
Grand Total	100.0	2171	1958	1722	1950

[1] Costs are prorated figuring each campsite will last 10 years.

[2] Costs are prorated figuring each outhouse will last 5 years.

Table 3. Comparison of user-days and big-game harvest during three years of experimental fee hunting on the Huntington Wildlife Forest.

Year	Type of hunt	Number of hunters	Number of user days	Number of bear	Number of deer harvested		
					Male	Female	Total
1978	Archery	225	670.5	2	3	3	6
1979	Archery	108	317.0	1	1	0	1
	Muzzle-loader	56	162.0	1	1	1	2
1980	Archery	74	266.0	1	1	3	4
	Muzzle-loader	119	314.0	1	8	2	10
	Rifle	84	228.0	0	3	0	3
Totals		666	1957.5	6	17	9	26

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Job XIII-4

Table 4. Comparison of weights and antler beam diameters of deer harvested during two periods of hunting on the Huntington Wildlife Forest.

Age	Hunt Period	WEIGHT (lbs.) MALE Mean	MALE N	MALE Sig[3]	FEMALE Mean	FEMALE N	FEMALE Sig[3]	ANTLER BEAM DIAM. (mm) MALES ONLY Mean	MALES ONLY N	MALES ONLY Sig[3]
Fawn	1966-70[1]	52.0	38	*	51.4	31				
	1978-81[2]	62.3	4		50.8	4				
1½	1966-70	87.0	28	*	75.1	16		13.65	17	
	1978-81	109.4	9		94.0	1		16.13	8	
2½ and 3½	1966-70	115.0	34	*	95.5	27	*	21.88	34	
	1978-81	137.2	9		105.3	7		22.44	9	
4½+	1966-70	151.5	34	*	98.3	63	*	29.35	34	*
	1978-81	189.5	8		122.3	3		35.00	8	

1 Day-use rifle hunting only under party permit system.

2 Combined archery, muzzleloader and limited rifle hunting.

3 A probability of $P < 0.05$ was used to determine significance.

Table 5. Projected deer population growth under two harvest schemes on the Huntington Forest deer hunt study area.

Time	CURRENT HARVEST RATE Male	Female	33% EVEN SEX ANNUAL HARVEST Male	Female
Fall 1980[a]	45	45	45	45
Harvest	12	5	12	5
Spring 1981[b]	33	40	33	40
Recruitment[c]	20	20	20	20
Fall 1981	53	60	53	60
Harvest	19	5	19	5
Spring 1982	34	55	34	55
Recruitment	27	27	27	27
Fall 1982	61	82	61	82
Harvest	21	7	21	42
Spring 1983	40	75	40	40
Recruitment	38	38	20	20
Fall 1983	78	113	60	60
Harvest	29	10	20	20
Spring 1984	49	103	40	40
Recruitment	52	51	20	20
Fall 1984	101	154	60	60
Harvest	38	13	20	20
Spring 1985	63	141	40	40
Recruitment	71	71	20	20
Fall 1985	134	212	60	60
Deer/mi^2 Fall 1985	42.5		14.7	
Total Harvest	119	40 = 159	92	92 = 184

[a] Estimates

[b] Optimum conditions assumed - no predation and no winter mortality

[c] Recruitment according to Hesselton and Jackson 1974

Appendix I

Huntington Wildlife Forest 1980 Archery Hunt

Schedule and Information Sheet

A. Where: Newcomb Campus of the State University of New York College of Environmental Science and Forestry, Huntington Wildlife Forest Station, Newcomb, N.Y.

B. When: Bowhunting only is scheduled during the following periods:

Hunt #1 Sept. 27 - Oct. 10	Any portion of this period (bucks, does, bear) (See Special Note)
Hunt #2 Nov. 1 - 9	Any portion of this period (bucks and bear only)

C. Who: These hunts are restricted to bowhunters, both residents and nonresidents. Each hunter must possess a valid, unfilled N.Y.S resident or nonresident big game license and archery stamp. No special permits are required. All hunting activities, hours, licenses, equipment, bag-limits, etc. are as described by New York State Conservation Law for the Northern Zone of New York.

SPECIAL NOTE: BEWARE: Hunting parties making reservations for the first four days of Hunt #1 (Sept. 27 - Sept. 30). Due to the way in which the N.Y.S license year runs (Oct. 1 - Sept. 30), all hunters participating in the first four days of Hunt #1 must have an unfilled 1979 big game license and archery stamp.

D. What: Both white-tailed deer and black bear hunting will be permitted. One deer of either sex and one black bear may be taken per license during Hunt #1. No small game hunting will be permitted on the hunting area. During Hunt #2, only legal antlered bucks and bear may be taken.

E. Area: An area of over 5,000 acres of managed private forest land in Newcomb, N.Y. adjoining several thousand acres of public wilderness land will be open to hunting. This area is in the "heart" of the Adirondack Region of New York State. Maps of the hunting area will be provided to each hunter upon arrival.

F. Hunting: 1. Camping Parties. A maximum of 25 camping parties will be permitted on the hunting area during any one hunt. The minimum party size (camping parties) is two persons. Hunting is by prior reservation only, reservations will be accepted through Sept. 25, 1980. However, parties will be selected on a first come first served basis until the limit is reached for each hunt (based on the time when the completed reservation form and deposit are received).

Camping parties may arrive after 1:00 p.m. on the day preceeding their first scheduled day of hunting to set up camp and look over the area. Parties will be required to be off the hunting area by 12:00 noon on the day following the last day of their hunt. All parties must leave the hunting area by 1:00 p.m. on Oct. 10, 1980.

Private camping areas, accessible by gravel road, are distributed throughout the hunting area. Each party will be assigned to a camping area, however party members may hunt anywhere within the hunting area. Campsites will consist of reasonably level, cleared ground with a garbage can and an outdoor toilet. No electricity or running water will be available. Water may be obtained from any of a number of brooks, streams and lakes within the hunt area. Firewood will be available at four locations within the area.

2. Day Use Hunting Day use hunting will be permitted throughout the two bowhunting periods. Day use hunters will be required to check in at the check station prior to entering the hunting area. The check station will be open from 8:00 a.m. to 4:30 p.m. on weekdays and from 5:30 a.m. to 9:00 a.m. on weekends and holidays. (Day use hunters wishing to get an earlier start on weekdays should check in the afternoon before at the check station). The number of day use hunters permitted on the hunting area will vary depending on the numbers of camping hunters present at that time. A maximum of 100 hunters (camping and day use) will be permitted on the hunting area at any one time. Past experience indicates that at least 25 day use hunters could be accomodated during most days. Day use hunters will be required to be off the hunting area by 7:00 p.m. (except on Oct. 10th when all hunters will be required to be off the hunting area by 1:00 p.m. Day use hunters will be assigned to park their vehicle(s) in one of the several parking areas. These hunters may hunt anywhere on the 5,200 acre hunting area, however.

G. Fee and Payment: Each hunter will be assessed a fee of $5.00 per day of hunting. A deposit of $10.00 per party must accompany each camping party's reservation form. The deposit is nonrefundable, except in instances where the quota of hunters for the particular hunting period requested has been filled. In this case, if the party is unable to reschedule at a different time, the deposit will be returned. The amount of the deposit will be deducted from the total cost for each party. The balance must be paid upon arrival. All checks should be made payable to: Treasurer, Syracuse University. Day use hunters will also be assessed a fee of $5.00 per day. This fee must be paid at the time of check in. There is no deposit required for day use hunting.

At the time of check in, hunters will indicate the number of days they plan to hunt. The total fee for each hunter will be determined based on this information and collected at this time. No refunds will be given if a hunter decides to leave earlier. If a hunter decides to stay longer than the original time indicated, the additional fee will be collected at his campsite.

H. How to find us: See enclosed map. Specific directions to the hunting area and campsites will be available upon arrival. All hunting parties must check in at the Adirondack Ecological Center (our office building) located on the north side of Route 28N just outside Newcomb, heading towards Long Lake.

I. Other: Due to a busy schedule of research and management activities throughout the summer and early fall, we cannot allow hunters access to the hunt area for scouting purposes, prior to their scheduled hunting dates.

All deer and bear taken on the hunt area will be checked by staff personnel. Age, weight, antler development, kill location, etc. will be recorded.

Portable tree stands will be permitted.

No firearms of any kind will be permitted.

The roads in the hunt area are narrow, gravel roads. If possible please come in a vehicle which has reasonably good ground clearance.

If you have additional questions regarding these hunts, contact:

Richard W. Sage, Jr.
Huntington Wildlife Forest
Newcomb, New York 12852

Phone: Office (518) 582-4551
Home (518) 582-4602

Michael J. Tracy
Huntington Wildlife Forest
Newcomb, New York 12852

Phone: Office (518) 582-4551

Huntington Wildlife Forest 1980 Hunting Seasons

INFORMATION AND REGULATIONS

1) DRIVING - MAXIMUM SPEED LIMIT - 15 MPH

WATCH THE ROAD - There will be plenty of time to look for deer later.

STAY IN THE CENTER OF THE ROAD - Don't cut corners - watch your trailer also.

BE CAREFUL WHERE YOU PULL OFF - When meeting another vehicle - get out and check the area first.

CARS WITH TRAILERS HAVE THE RIGHT-OF-WAY

BE PREPARED - You may meet another vehicle at any time.

REMEMBER - If you get stuck - it can be a long walk out for help.

We CANNOT assume responsibility for damage to your vehicle if we have to pull you out of the ditch. REMEMBER - Your whole hunting trip can be ruined by one driving error.

PLEASE BE CAREFUL

2) All hunters must check in before entering the hunting area and check out following the completion of the hunt. You must check out before 12:00 noon the day following the last day of your scheduled hunt. Exception - All hunters must leave the hunting area by 1:00 p.m. on Oct. 10, 1980 and Oct. 17, 1980.

3) You must camp in the assigned campsite area, however, you may hunt anywhere on the 5,200 acre hunting area or on adjacent state land. You may use your vehicle to get around in the hunting area. You may come and go, to and from, the hunting area as you please. Remember your bow or gun must be cased, unstrung, or secured in the truck when traveling in a vehicle after hunting hours. Day use hunters must park their vehicles in the assigned parking area.

4) Hang onto your receipt - it is your "ticket" to be on the hunting area.

5) The gate should be closed and locked at all times, for your protection as well as ours. Each hunter will be provided with the combination to the lock.

6) All N.Y.S. regulations governing big game hunting: hours, equipment, bag-limits, licenses, etc. for the Northern Zone of N.Y.S. shall apply to hunting activities conducted during the hunt.

7) All hunters participating in the rifle hunt must provide and wear, while hunting, an outer garment or cap containing at least 200 square inches of "Hunter Orange" (Blaze or Florescent Orange) material visible from all sides.

8) Only deer and bear may be taken, no other animals of any kind may be taken on the hunting area.

9) All deer and bear must be checked by staff personnel.

10) You will be asked to fill out a questionnaire and return it to us when you check out.

11) Please - no nails in our trees, no pets on the hunting area and no littering.

12) Please restrict all fires to campsite and parking areas.

13) Drunk and/or disorderly conduct will not be permitted.

14) No firearms are permitted on the hunting area during the Archery Hunts.

15) Please keep all vehicles and campers well off the road so others can get by.

16) Firewood may be picked up at designated locations (see map). Any dead, down material may also be used for firewood.

17) Water may be collected from any of the streams, brooks, or lakes on the hunting area. It is safe to drink. There is also a spring along the main access road before Long Pond (on the left coming in). It is marked with a sign.

18) Cutting of small poles and stakes as needed for camping purposes is permitted on the hunting area.

19) Portable tree stands are permitted.

20) There are several marked deer, with ear tags and/or collars on the hunting area. These may be shot just like any other deer. There is a $10.00 reward for these deer.

21) There is a doctor in Newcomb - phone 582-2991 or 582-2321. Gas, groceries, and other services are available in Newcomb or Long Lake.

22) If you have any problems or questions concerning the hunt please contact Dick Sage at our office 8:00 a.m. - 4:30 p.m. weekdays or at home: second house in, north side of Rte. 28N; 100 yards past main office heading toward Newcomb. Members of the staff will be on the hunting area from time to time, you can check with them if necessary.

23) Failure to comply with the above regulations may result in forfeiture of your right to be on the hunting area. In this case, you will be asked to leave.

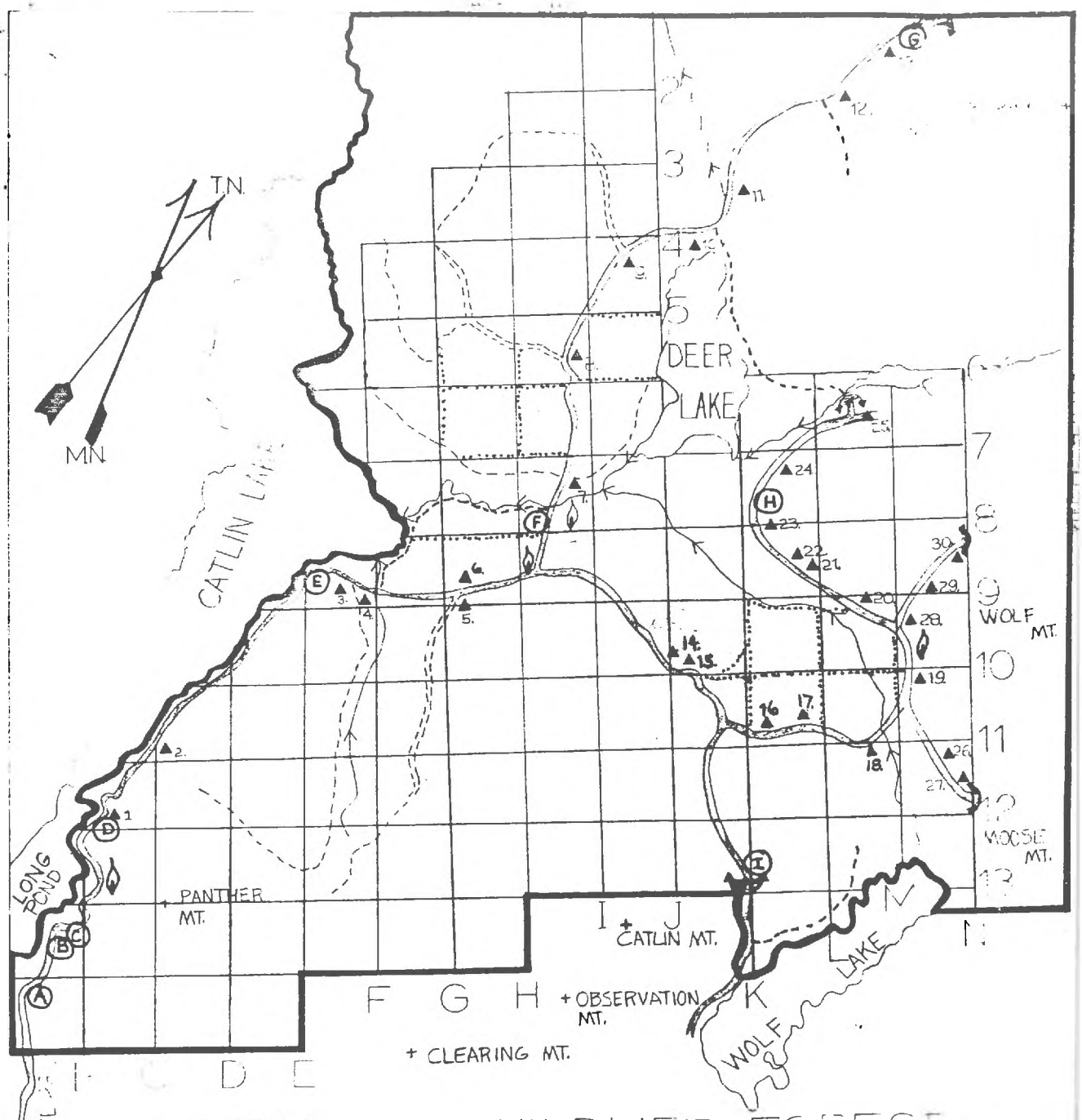
24) Please - Hunt Safely - Be certain of your target - respect the rights of others. The staff at Huntington Forest wishes each hunter the BEST OF LUCK.

Grid Line System (see your map)

Most of the hunting area is covered by a system of orange painted grid lines (orange paint blazes on trees). These lines are one-quarter (¼) mile apart. The lines running up and down the hunting area are lettered B (mostly westerly) through N (mostly southerly). At the intersection of two lines there should be a tree with three orange painted rings and a metal tag with the grid corner stamped on it. (Example K 12) When you are standing looking directly at the metal tag on the tree, you are facing North. This will help you decide which grid line to follow as you leave the grid corner for navigation purposes. Where grid lines intersect roads, there is usually an orange sign with the appropriate grid line number or letter on it. The road network on which campsites 17 - 30 are located have no such signs. Grid lines running through recently logged areas may be difficult to follow in places. The compass bearing of the grid lines are as follows: Lettered lines - S39 E and N39 W; the numbered lines - S51 and N51 E (these are true bearing).

The Huntington Forest boundary is marked by yellow painted blazes on the trees and metal yellow posted signs. There are also numbered pipes driven in the ground along the boundary. These numbers do not refer to grid line numbers.

N.Y. W-105-R
Job XIII-4



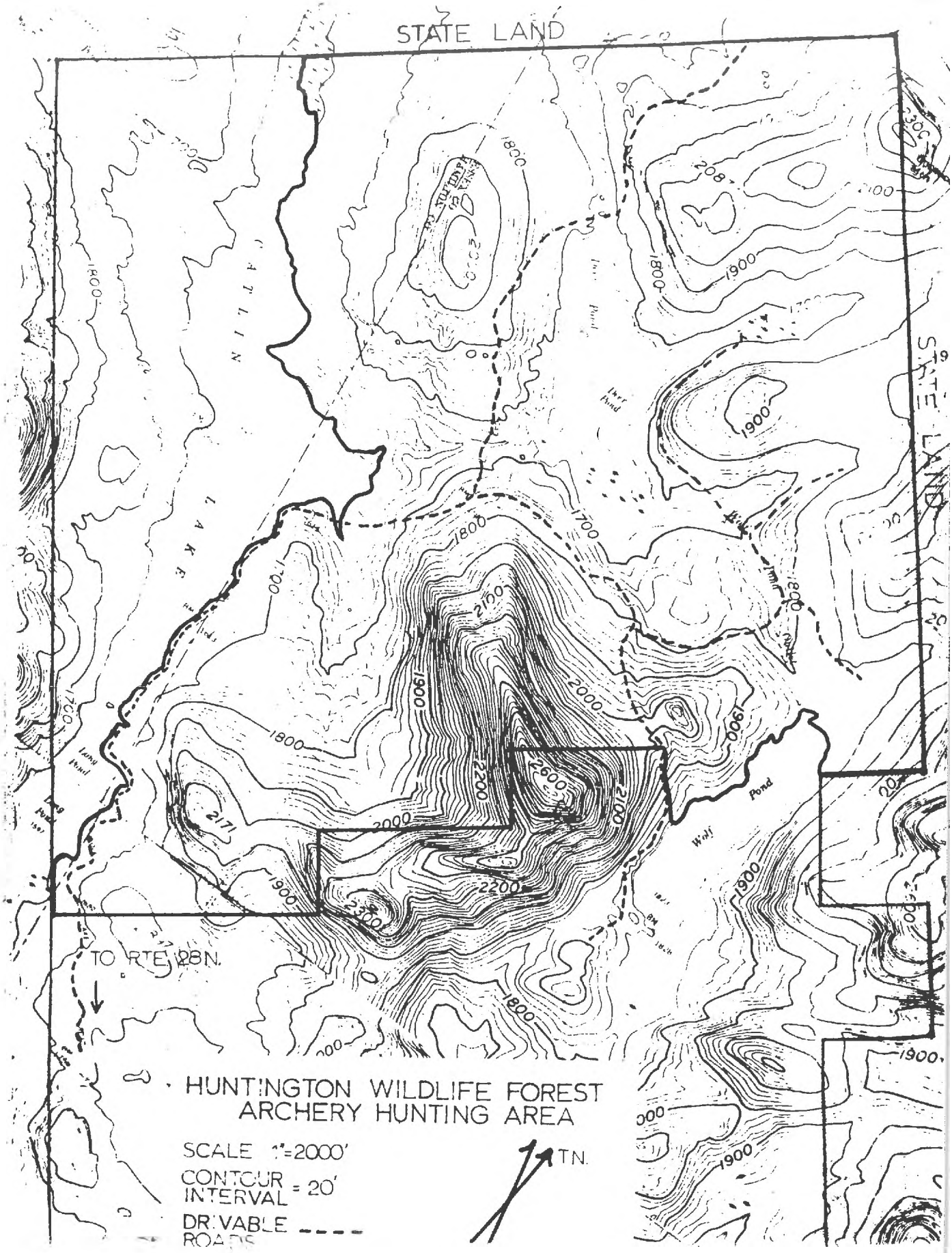
HUNTINGTON WILDLIFE FOREST
ARCHERY HUNTING AREA
NORTH UNIT

— LEGEND —

Ⓐ PARKING AREAS
▲ CAMPSITES
FIREWOOD
STREAMS
TURNAROUND - NO DRIVING PAST THIS POINT

TRUCK TRAIL
LOGGING TRAIL
TRAIL ····· Brushed Gridline
HUNT BOUNDARY
SCALE IN MILES

GRID LINE BEARINGS
LETTER LINES — S 39° E TRUE, N 39° W
NUMBER LINES — S 51° W TRUE, N 51° E


STATE LAND
LAKE CATLIN
Lower Pond
Wolf Pond
TO RTE. 28N.
HUNTINGTON WILDLIFE FOREST
ARCHERY HUNTING AREA
SCALE 1"=2000'
CONTOUR INTERVAL = 20'
DRIVABLE ROADS
TN.

Huntington Wildlife Forest 1980 Hunting Season

This reservation if for: (circle one)*

Archery Hunt (Sept. Oct.) Muzzleloader Hunt Rifle Hunt Archery Hunt (Nov.)

* Please use a separate reservation form for each hunt if you plan to attend more than one.

Party Leader: Name _____

Address: _____

_____ (zip code)

Phone no. _____ (area code)

No. in Party: _____ Date & approximate time of arrival: _____ Date Time

Date of Departure: _____

Type of Vehicle: _____ No. of Vehicles: _____

Type of Camping:
(check one)
_____ Tent - how many tents _____
_____ Pick-up Camper
_____ Travel Trailer - Trailer length _____ ft.
_____ Other (specify) _____

If you prefer a particular campsite, please specify number here # _____.
We will try to accomodate you whenever possible.

Name: _____ Name _____

Address: _____ Address: _____

_____ _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

REMINDERS: A deposit of $10.00 per party must accompany each reservation form. Checks should be made payable to: Treasurer, Syracuse University.

Return completed form and deposit to:

Richard W. Sage, Jr.
Huntington Wildlife Forest
Newcomb, New York 12852

For Office Use Only

_____ Reservation confirmed for hunt number _____ Dates _____

Deposit received _____ date initials

Campsite Assignment Number _____

_____ Reschedule - Quota filled for Hunt no. _____

_____ Return deposit - Party unable to reschedule hunt.

1980 HUNTING QUESTIONNAIRE

Name _____

Please fill out this questionnaire and place it in the black box at the gate or return it to the office before you leave for home.

GENERAL INFORMATION:

1) Are you a member of an organized archery/muzzleloader group? (circle one)
Yes No

If yes, check one or more

Local Club _____ State Association _____ National Association _____

Name of Organization _____

2) Do you presently hunt with gun _____ bow _____ muzzleloader _____

3) How many years have you hunted?

In total _____ with a bow ____ with a gun _____ with a muzzleloader _____

4) Where do you normally bowhunt/muzzleloader hunt?

Region or County _____ State _____

5) Do you belong to a hunting club which owns or leases land for hunting? (circle one)
Yes No

6) On the average, how many days per year do you spend bowhunting/muzzleloader hunting for deer? _____ days

7) How many days do you spend afield each year, involved in non-hunting activities?
_____ days

8) Have you paid a fee to hunt before, other than for a license? (circle one)
Yes No

If yes, Big Game _____ Small Game ____ Waterfowl _____ Other _____

9) Do you usually hunt big game on public or private land? (check one)

public _____ Private _____

10) Do you prefer to hunt big game on public or private land? (check one)

public _____ private _____ no opinion _____ Why? _____

_____

REACTION TO HUNTINGTON FOREST HUNT

11) Was your campsite adequate? (circle one) Yes No Campsite no. _____

If not, how should it be improved? _____

12) Were the access roads adequate? (circle one) Yes No

If not, how should they be improved? _____

13) What are your feelings about the following, based on your hunting experiences here during the past few days? (circle one)

a. Reservation procedure - convenient inconvenient okay no opinion

b. Check in - check out procedures - convenient inconvenient okay no opinion

c. Hunting and camping rules and regulations - convenient inconvenient okay no opinion

d. Number of hunters - too many too few okay no opinion

e. Hunting conditions - tough average easy no opinion

f. Maps of hunting area provided - useful okay useless no opinion

g. Deer population - high low about right no opinion

h. Bear population high low about right no opinion

14) Did you hunt here last year? (circle one) Yes No

15) How did you hear about this hunt? _____

16) Did you hunt on the Huntington Forest area only, or did you also hunt on adjacent state land? (check one) Huntington only ____ State ____ Both _____

17) Did you hunt from a portable tree stand? (circle one) Yes No

18) What did you like most about this hunting experience? _____

_____

19) What did you like least about this hunting experience? _____

_____

20) Did you use our painted grid line system for navigating while hunting? (circle one)

Yes No

21) If you hunted in some of the areas which have been logged recently, what is your impression of hunting in these areas? _____

_____

22) Other than increasing the number of deer on the hunting area, how might we increase hunter success on this area? _____

_____

23) During your hunt here, were you primarily hunting (check one) bear _____

bucks _____ deer of either sex _____ all of these _____

24) How many days did you hunt? _____ days

25) How many hours did you actually hunt? _____ hours

26) a. How many deer and/or bear did you see? Total bear _____ Total deer _____

Bucks _____ Does _____

b. Number of shots taken. Deer _____ Bear _____

c. Number of hits. Deer _____ Bear _____

d. Killed (circle one). None Doe Buck Bear

27. Was this hunt well run? (circle one) Yes No

FUTURE HUNTING AT HUNTINGTON FOREST

28) What suggestions do you have for improving these hunts in the future?

_____

_____

29) Assuming you can get away, would you come back to hunt this area again next year?

(circle one) Yes No

30) Would you purchase a season hunting pass costing $50.00 per hunter, which would permit you to camp and hunt (deer or bear) on this area anytime during the northern zone Big Game Archery/Muzzleloader Season? (circle one) Yes No

31) If we were to open this same hunting area to rifle hunters (bucks only) during the regular fall big-game season (following the Archery Season) would this affect your decision to hunt here in the future? (circle one) Yes No

If yes, how and why? _____

_____

32) If you were in this area during the summer months, would you pay a fee of $3.00 per car to travel the 25 miles of roads on this property for the purposes of viewing and photographing wildlife, seeing the scenery or just taking a drive in the woods? (circle one) Yes No

33) If permitted, would you come and do some pre-season scouting on this area prior to coming to hunt? (circle one) Yes No

34) Additional Remarks: _____

_____

_____

Appendix II

HUNTINGTON FOREST FEE HUNTS 1978 - 81

FOUR YEAR HUNTER QUESTIONNAIRE SUMMARY

1. ARE YOU A MEMBER OF AN ORGANIZED HUNTING CLUB?

	1978	1979	1980	1981	Total	%
Yes	54	39	13	17	123	29
No	76	73	96	63	308	71

2. DO YOU HUNT WITH:

Gun	103	88	98	70	359	58
Bow	129	88	61	56	334	54
ML	-	40	61	62	163	27
N	130	112	231	142	615	

3. NUMBER OF YEARS HUNTED:

					Ave.
Total	18	18	-	18	18
Gun	16	16	17.7	17.3	16.75
Bow	10	10	8.5	7.7	9.05
ML	-	4	3.3	2.2	3.17

4. WHERE DO YOU NORMALLY HUNT?

NY	93	93	66	35	287	72
PA	8	3	13	36	60	15
NJ	18	6	7	9	40	10
CT	1	0	0	0	1	0.2
VT	4	3	3	0	10	2.5
W.VA	-	-	1	0	1	0.3

5. DO YOU BELONG TO A CLUB WHICH LEASES LAND FOR HUNTING?

Yes	36	25	22	23	106	25
No	92	84	85	54	315	75

6. HOW MANY DAYS DO YOU SPEND BOW/ML HUNTING PER YEAR?

				Ave.
-	16.3	14.4	23.4	17.5

7. HOW MANY DAYS PER YEAR SPENT AFIELD NON-HUNTING?

				Ave.
-	35.0	36.6	47.3	39.4

8. HAVE YOU PAID A FEE TO HUNT BEFORE?

	1978	1979	1980	1981	Total	%
Yes	54	44	35	29	162	38
No	76	68	73	50	267	62
Big Game	35	28	25	-	88	66
Small Game	3	4	5	-	12	9
Water	-	4	7	-	11	8
Other	-	1	0	-	1	1
Big & Small	15	6	-	-	21	16

9. DO YOU USUALLY HUNT BIG GAME ON PUBLIC OR PRIVATE LAND?

Public	52	43	51	32	178	41
Private	51	52	60	36	199	46
Both	26	17	3	12	58	13

10. DO YOU PREFER TO HUNT BIG GAME ON PUBLIC OR PRIVATE LAND?

Public	32	9	14	4	59	16
Private	80	62	61	15	218	59
Both	10	5	2	-	17	5
No Opinion	2	36	34	1	73	20

11. WAS YOUR CAMPSITE ADEQUATE?

Yes	113	90	100	75	378	94
No	15	1	4	4	24	6

12. WERE ACCESS ROADS ADEQUATE?

Yes	130	111	110	78	429	99
No	0	1	0	2	3	1

13. A. RESERVATION PROCEDURE

Convenient	90	89	86	62	327	77
Inconvenient	1	1	0	0	2	0.5
Okay	33	14	21	18	86	20
No Opinion	3	4	1	0	8	2.5

B. CHECK-IN CHECK-OUT PROCEDURE

Convenient	94	95	86	62	337	80
Inconvenient	0	1	1	0	2	0.5
Okay	29	12	17	16	74	17.5
No Opinion	3	2	2	0	7	2

C. HUNTING AND CAMPING RULES AND REGULATIONS

	1978	1979	1980	1981	Total	%
Convenient	96	87	84	59	326	77
Inconvenient	1	1	0	0	2	0.5
Okay	28	18	22	20	88	21
No Opinion	1	2	4	0	7	1.5

D. NUMBER OF HUNTERS

Too Many	1	1	10	3	15	3.0
Too Few	52	35	23	25	135	31
Okay	71	68	76	49	264	61
No Opinion	6	6	4	2	18	5.0

E. HUNTING CONDITIONS

Difficult	103	65	66	25	259	60
Average	25	42	40	55	162	37
Easy	-	2	2	0	4	1
No Opinion	1	1	3	3	8	2

F. MAPS

Useful	103	94	93	59	349	81
Okay	19	14	16	17	66	15
Useless	3	1	2	1	7	2
No Opinion	3	2	1	1	7	2

G. DEER POPULATION

High	2	4	2	0	8	2
Low	91	75	56	45	267	63
All right	15	14	45	21	95	22
No Opinion	15	14	15	10	54	13

H. BEAR POPULATION

High	17	12	2	0	31	7
Low	43	38	50	49	180	43
All right	19	16	17	5	57	14
No Opinion	44	37	47	23	151	36

14. DID YOU HUNT ON HUNTINGTON FOREST ONLY OR ALSO ON ADJACENT STATE LAND?

	1978	1979	1980	1981	Total	%
Hunt. Only	108	82	72	65	327	77
State Only	3	2	0	0	5	1
Both	15	27	34	15	91	22

15. DID YOU HUNT FROM A PORTABLE TREE STAND?

Yes	100	34	6	12	152	36
No	30	71	101	68	270	64

16. DID YOU USE THE GRID SYSTEM?

Yes	53	37	52	44	186	43
No	75	75	58	35	243	57

17. DURING YOUR HUNT HERE WERE YOU PRIMARILY INTERESTED IN:

Bear	24	47	12	83	15
Bucks	39	109	37	185	34
All Deer	27	31	29	87	16
All	39	80	70	189	35

18. HOW MANY HOURS DID YOU HUNT?

	Mean	Sum	SD	SE	N	
1978	23.54	3013	15.48	1.37	128	
1979	28.80	2309	21.63	2.05	111	
1980	21.00	4851	12.00	0.79	231	
1981	24.94	3541	12.38	1.04	142	
Total	22.41	13714	14.56	1.20	612	7.28 hours/day

19. HOW MANY DAYS DID YOU HUNT?

1978	2.98	381	1.25	0.11	128
1979	2.90	322	1.75	0.17	111
1980	2.96	683	3.25	0.21	231
1981	3.50	496.5	1.53	0.13	142
Total	3.08	1882.5	2.16	0.16	612

SD = Standard Deviation

SE = Standard Error

20. A. HOW MANY DEER AND/OR BEAR DID YOU SEE?

	Bear	Deer	Bucks	Does	Unknown	N
1978	17	216	62	121	33	130
1979	32	237	44	163	30	112
1980	16	393	57	288	48	231
1981	5	374	55	240	79	142
Total	70	1220	218	812	190	-
Mean/Yr.	17.5	305	54.5	203	47.5	4
Mean/Hunter	0.11	1.98	0.35	1.32	0.31	615

B. HOW MANY SHOTS WERE TAKEN?

	Bear	Deer	N
1978	8	55	130
1979	3	13	112
1980	4	61	231
1981	0	56	142
Total	15	185	615
Mean/Yr.	3.75	46.25	-
Mean/Hunter	0.024	0.30	

C. HOW MANY HITS?

1978	-	-	-
1979	1	2	112
1980	3	27	231
1981	0	24	142
Total	4	53	485
Mean/Yr.	1.33	17.67	-
Mean/Hunter	0.008	0.11	-

D. HOW MANY KILLED?

1978	0	7	130
1979	1	1	112
1980	2	16	231
1981	0	17	142
Total	3	41	615
Mean/Yr.	0.75	10.25	-
Mean/Hunter	0.005	0.067	-

21. WAS THIS HUNT WELL RUN?

	1978	1979	1980	1981	Total	%
Yes	124	105	222	136	587	98
No	4	0	4	1	9	2

22. ASSUMING YOU CAN GET AWAY, WOULD YOU COME BACK NEXT YEAR?

Yes	80	89	97	74	340	83
No	45	16	7	3	71	17

23. WOULD YOU BUY A SEASON PASS COSTING $50.00?

Yes	-	16	20	24	60	22
No	-	91	80	48	219	78

24. WOULD YOU PAY $3.00 TO DRIVE THE ROADS IN SUMMER, IF HERE?

Yes	-	57	61	50	168	60
No	-	48	43	22	113	40

25. IF PERMITTED, WOULD YOU COME AND SCOUT IN THE PRE-SEASON?

Yes	-	80	79	54	213	73
No	-	30	25	22	77	27

26. IF AREA OPEN TO RIFLE HUNTERS, WOULD THIS EFFECT YOUR DECISION TO HUNT HERE IN THE FUTURE?

Yes	-	62	45	51	158	56
No	-	46	55	24	125	44

27. DID YOU HUNT HERE IN PREVIOUS YEAR(S)?

Yes	-	25	61	62	148	31
No	-	86	164	80	330	69

28. DO YOU NORMALLY TAKE A HUNTING TRIP LASTING ONE WEEK OR MORE ANNUALLY?

1978 only - Yes = 74 (57%)
No = 55 (43%)

29. DO YOU HUNT SMALL GAME WITH:

1978 only -
Bow	- 4	(3%)
Gun	- 60	(46%)
Both	- 43	(33%)
Not at all	- 22	(18%)

30. HOW DOES LOGGING AFFECT DEER NUMBERS?

1978 only
Increase - 73 (57%)
Decrease - 12 (10%)
No Effect - 12 (10%)
No Opinion - 28 (23%)

31. WOULD YOU LIKE TO SEE THESE HUNTS EXTENDED TO ONE WEEK RATHER THAN JUST 4 DAYS?

1978 only
Yes - 61 (48%)
No - 65 (52%)

32. WOULD YOU PARTICIPATE IN A "BUCKS ONLY" HUNT ON THIS PROPERTY DURING MID- NOVEMBER FOR BOWHUNTERS ONLY?

1978 only
Yes - 42 (33%)
No - 84 (67%)

33. IS 12/DEER/MI^2 ADEQUATE TO MAINTAIN YOUR INTEREST?

1978 only
Yes - 32 (29%)
No - 79 (61%)

34. DID YOU PASS UP A GOOD SHOT?

1980 only
Yes - 7 deer (4%) 2 bear
No - 161 deer (96%)

35. WOULD YOU BE IN FAVOR OF A "ONE DEER OF EITHER SEX" SEASON IN NORTHERN NEW YORK?

1980 only
Yes - 67 (60%)
No - 45 (40%)

36. WOULD YOU BE IN FAVOR OF A "ONE DEER OF EITHER SEX" SEASON ON CERTAIN PRIVATE LANDS IN NORTHERN NEW YORK WHERE LANDOWNERS CAN DEMONSTRATE SIGNIFICANT LOSSES DUE DIRECTLY TO DEER?

1980 only
Yes - 93 (87%)
No - 14 (13%)

37. SHOULD BOWHUNTERS AND MUZZLELOADERS IN N.Y.S. BE REQUIRED TO BUY A SPECIAL "STAMP" IN ADDITION TO A REGULAR BIG GAME LICENSE, IF THEY STILL TAKE ONLY ONE DEER PER SEASON?

1980 only
Yes - 32 (28%)
No - 83 (72%)

38. WOULD YOU BE IN FAVOR OF BOWHUNTERS AND/OR MUZZLELOADERS BEING PERMITTED TO TAKE A DEER OF EITHER SEX ON THIS STAMP, AS WELL AS A BUCK ON THEIR REGULAR BIG GAME LICENSE?

1980 only
Yes - 96 (86%)
No - 15 (14%)

39. BASED ON YOUR EXPERIENCE THIS YEAR, DO YOU THINK THERE ARE MORE, LESS OR THE SAME NUMBER OF DEER ON THE HUNTING AREA COMPARED TO THE LAST TIME YOU HUNTED HERE?

1981 only
More - 31 (53%)
Less - 4 (07%)
Same - 23 (40%)

40. WOULD YOU FAVOR THE ESTABLISHMENT OF A HARVEST QUOTA SYSTEM (FOR THIS PROPERTY) WHICH WOULD DESIGNATE THE NUMBER OF BUCKS AND DOES TO BE HARVESTED EACH YEAR? THIS WOULD MEAN THAT WHEN THE BUCK QUOTA WAS REACHED, ONLY DOE HUNTING WOULD BE PERMITTED, OR VICE VERSA, UNTIL THE TOTAL HARVEST QUOTA IS REACHED.

1981 only
Yes - 21 (34%)
No - 34 (55%)
No opinion - 7 (11%)

41. WOULD YOU FAVOR A DEER MANAGEMENT PROGRAM (ON THIS PROPERTY) AIMED AT MAXIMIZING THE PRODUCTION OF TROPHY BUCKS?

1981 only
Yes - 26 (42%)
No - 28 (45%)
No opinion - 8 (13%)

42. UNDER A PROGRAM OF TROPHY BUCK MANAGEMENT, WOULD YOU BE MOST INTERESTED IN SHOOTING A:

1981 only
Large heavy bodied buck - 5 (08%)
A buck with large antlers - 39 (64%)
No opinion - 17 (28%)

43. WOULD YOU FAVOR A POLICY (ON THIS PROPERTY) WHICH WOULD DISCOURAGE THE SHOOTING OF FAWNS?

1981 only
Yes - 47 (76%)
No - 10 (16%)
No opinion - 5 (08%)

44. WOULD YOU FAVOR A POLICY (ON THIS PROPERTY) WHICH WOULD RESTRICT THE SHOOTING OF:

A. SPIKEHORNS?

1981 only

Yes	- 27 (44%)
No	- 33 (54%)
No opinion	- 1 (02%)

B. OF SPIKEHORNS AND FORKHORNS?

Yes	- 13 (29%)
No	- 29 (64%)
No opinion	- 3 (07%)

45. WOULD YOU BE IN FAVOR OF ESTABLISHING A PROGRAM TO FEED DEER (ON THIS PROPERTY) DURING SEVERE WINTERS?

Yes	- 44 (71%)
No	- 15 (24%)
No opinion	- 3 (05%)

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